

WHAT IS CLAIMED IS

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1. A document management apparatus which manages a group of documents stored in a document storage device, the document management apparatus comprising:

a first unit generating an operational history record of one of the stored documents of the group every time an operation on said one of the stored documents is performed by a document operation device;

a second unit storing the operational history records generated by the first unit; and

a third unit determining whether a selected item of the operational history record, stored for a currently processed document among the stored documents, matches with a corresponding item of each of the operational history records, stored for the remaining ones of the stored documents other than the currently processed document, so that the third unit extracts a list of related documents, which are related to the currently processed document, from the remaining ones of the stored documents of the group, based on results of the matching.

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2. The document management apparatus of claim 1, wherein  
the third unit performs the matching between the currently processed  
document and the remaining ones of the stored documents of the  
group with respect to at least one item of each operational history  
5 record.

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10 3. The document management apparatus of claim 2, wherein  
said at least one item of each operational history record is selectable  
from among items contained in each operational history record.

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4. The document management apparatus of claim 2, wherein  
said at least one item of each operational history record is selected  
by the document operation device from among items contained in  
20 each operational history record.

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5. The document management apparatus of claim 2, wherein

each operational history record contains an item of date and time of operation for one of the stored documents of the group.

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6. The document management apparatus of claim 2, wherein each operational history record contains an item of operator name for one of the stored documents of the group.

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15 7. The document management apparatus of claim 2, wherein each operational history record contains an item of operation type for one of the stored documents of the group.

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25 8. The document management apparatus of claim 2, wherein the third unit comprises a document relation estimating unit calculating an estimated degree of relation between the currently processed document and each of the remaining ones of the stored documents of the group by using the selected item of the operational

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history record of the currently processed document, so that the third unit extracts the list of related documents based on the estimated degrees of relation calculated for the remaining ones of the stored documents.

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9. The document management apparatus of claim 8, wherein

10 each operational history record contains an item of time period of operation for one of the stored documents of the group, and wherein the document relation estimating unit calculates an estimated degree of relation between the currently processed document and each of the remaining ones of the stored documents by using the item of the  
15 operation time period of the currently processed document when said item is selected

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10. The document management apparatus of claim 8, wherein each operational history record contains an item of the number of reference accesses for one of the stored documents of the group, and wherein the document relation estimating unit calculates an estimated degree of relation between the currently processed

document and each of the remaining ones of the stored documents by using the item of the reference access number of the currently processed document when said item is selected.

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11. The document management apparatus of claim 8, wherein each operational history record contains an item of amount of copied data for one of the stored documents of the group, and wherein the document relation estimating unit calculates an estimated degree of relation between the currently processed document and each of the remaining ones of the stored documents by using the item of the copied data amount of the currently processed document when said item is selected.

20           12. The document management apparatus of claim 8, wherein  
each of the stored documents of the group contains a related  
document indication list, the related document indication list  
indicating a list of storage locations of related documents that are  
subjected to either copying operations to the document or reference  
25          accesses from the document, and wherein the document relation

estimating unit calculates an estimated degree of relation between the currently processed document and each of the remaining ones of the stored documents by using the related document indication list of the currently processed document.

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13. The document management apparatus of claim 1, wherein  
10 the third unit transmits the list of related documents to the document operation device, so that the document operation device outputs the list of related document in a recognizable form.

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14. The document management apparatus of claim 1, wherein  
the third unit stores a correlation between the list of related  
documents and an identifier of the operator who has processed the  
20 current document, together with the list of related documents, and,  
when the operator starts processing a new document, the third unit  
reads the list of related documents in response to the operator  
identifier by using the correlation between the list of related  
documents and the operator identifier.

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15. The document management apparatus of claim 13, further comprising a document transmission unit transmitting, when a request of outputting a related document contained in the list of related documents is received from the document operation device,

5       data of said related document from the document storage device to the document operation device.

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16. The document management apparatus of claim 1, wherein the document management apparatus is connected to the document storage device via a network.

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17. The document management apparatus of claim 1, wherein the document management apparatus is connected to the document operation device via a network.

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25       18. A related document extracting method for use in a

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document management apparatus which manages a group of documents stored in a document storage device, comprising the steps of:

- generating an operational history record of one of the stored
- 5 documents of the group every time an operation on said one of the stored documents is performed by a document operation device;
- storing the operational history records generated in said generating step;
- determining whether a selected item of the operational history
- 10 record, stored for a currently processed document among the stored documents of the group, matches with a corresponding item of each of the operational history records, stored for the remaining ones of the stored documents other than the currently processed document; and
- 15 extracting a list of related documents, which are related to the currently processed document, from the remaining ones of the stored documents of the group, based on results of the matching in the determining step.

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- 19. The related document extracting method of claim 18, wherein, in the determining step, the matching between the currently processed document and the remaining ones of the stored documents

of the group is performed with respect to at least one item of each operational history record.

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20. The related document extracting method of claim 19,  
wherein said at least one item of each operational history record is  
selected by an operator who processes the current document on the  
10 document operation device, from among items contained in each  
operational history record.

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21. The related document extracting method of claim 19,  
wherein each operational history record contains an item of date and  
time of operation for one of the stored documents of the group.

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22. The related document extracting method of claim 19,  
wherein each operational history record contains an item of operator  
25 name for one of the stored documents of the group.

23. The related document extracting method of claim 19,  
wherein each operational history record contains an item of  
operation type for one of the stored documents of the group.

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24. The related document extracting method of claim 19,  
wherein, in the determining step, an estimated degree of relation  
10 between the currently processed document and each of the remaining  
ones of the stored documents of the group is calculated by using the  
selected item of the operational history record of the currently  
processed document, so that the list of related documents is  
extracted based on the estimated degrees of relation calculated for  
15 the remaining ones of the stored documents.

20 25. The related document extracting method of claim 24,  
wherein each operational history record contains an item of time  
period of operation for one of the stored documents of the group,  
and wherein, in the determining step, an estimated degree of relation  
between the currently processed document and each of the remaining  
25 ones of the stored documents is calculated by using the item of the

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operation time period of the currently processed document when the item of the operation time period is selected.

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26. The related document extracting method of claim 24,  
wherein each operational history record contains an item of the  
number of reference accesses for one of the stored documents of the  
group, and wherein, in the determining step, an estimated degree of  
relation between the currently processed document and each of the  
remaining ones of the stored documents is calculated by using the  
item of the reference access number of the currently processed  
document when the item of the reference access number is selected.

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27. The related document extracting method of claim 24,  
wherein each operational history record contains an item of the  
amount of copied data for one of the stored documents of the group,  
and wherein, in the determining step, an estimated degree of relation  
between the currently processed document and each of the remaining  
ones of the stored documents is calculated by using the item of the  
copied data amount of the currently processed document when the

item of the copied data amount is selected.

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28. The related document extracting method of claim 24,  
wherein each of the stored documents of the group contains a related  
document indication list, the related document indication list  
indicating a list of storage locations of related documents that are  
subjected to either copying operations to the document or reference  
accesses from the document, and wherein, in the determining step,  
an estimated degree of relation between the currently processed  
document and each of the remaining ones of the stored documents is  
calculated by using the related document indication list of the  
currently processed document.

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20            29. A document processing assist method for use in a  
document management apparatus which manages a group of  
documents stored in a document storage device, comprising the steps  
of:  
25            generating an operational history record of one of the stored  
documents of the group every time an operation on said one of the

DOCUMENTS STORED

stored documents is performed by a document operation device;

storing the operational history records generated in said generating step;

5 determining whether a selected item of the operational history record, stored for a currently processed document among the stored documents of the group, matches with a corresponding item of each of the operational history records, stored for the remaining ones of the stored documents other than the currently processed document;

10 extracting a list of related documents, which are related to the currently processed document, from the remaining ones of the stored documents of the group, based on results of the matching in the determining step; and

15 transmitting the list of related documents from the document management apparatus to an output unit of the document operation device so that the output unit provides the list of related documents, received from the document management apparatus, to an operator who processes the current document on the document operation device.

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30. The document processing assist method of claim 29,  
further comprising the step of storing a correlation between the  
25 received list of related documents and the operator of the current

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document on the document operation device, wherein, when the operator processes the current document on the document operation device, the output unit provides the list of related documents to the operator in accordance with the store correlation.

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31. The document processing assist method of claim 29,

10 further comprising the step of transmitting, when the operator selects one of the related documents from the list, data of the selected related document from the document management apparatus to the output unit of the document operation device so that the output unit provides the data of the selected related document,  
15 received from the document management apparatus, to the operator.

20 32. A computer program causing a processor to execute a related document extracting process on a document management apparatus which manages a group of documents stored in a document storage device, comprising:

25 first program code means causing the processor to generate respective operational history records of the stored documents of the

group in response to an operation performed on each document by a document operation device;

second program code means causing the processor to store the operational history records generated by the first program code

5 means;

third program code means causing the processor to determine whether a selected item of the operational history record, stored for a currently processed document among the stored documents of the group, matches with a corresponding item of each of the operational 10 history records, stored for the remaining ones of the stored documents other than the currently processed document; and

fourth program code means causing the processor to extract a list of related documents, which are related to the currently processed document, from the remaining ones of the stored 15 documents of the group, based on results of the matching by the third program code means.

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33. A computer-readable recording medium storing program code instructions causing a processor to execute a related document extracting process on a document management apparatus which manages a group of documents stored in a document storage device, 25 comprising:

GROUP 10  
GROUP 9  
GROUP 8  
GROUP 7  
GROUP 6  
GROUP 5  
GROUP 4  
GROUP 3  
GROUP 2  
GROUP 1

first program code means causing the processor to generate respective operational history records of the stored documents of the group in response to an operation performed on each document by a document operation device;

- 5 second program code means causing the processor to store the operational history records generated by the first program code means;

third program code means causing the processor to determine whether a selected item of the operational history record, stored for 10 a currently processed document among the stored documents of the group, matches with a corresponding item of each of the operational history records, stored for the remaining ones of the stored documents other than the currently processed document; and

- 15 fourth program code means causing the processor to extract a list of related documents, which are related to the currently processed document, from the remaining ones of the stored documents of the group, based on results of the matching by the third program code means.

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